with subsequent shipments to Yucca Mountain for disposal. The waste storage tanks and their surrounding vaults would be partially filled with a retrievable grout to provide for interim stabilization of the tanks. Waste transportation destinations proposed under Alternative B are shown in Figure 2-3.

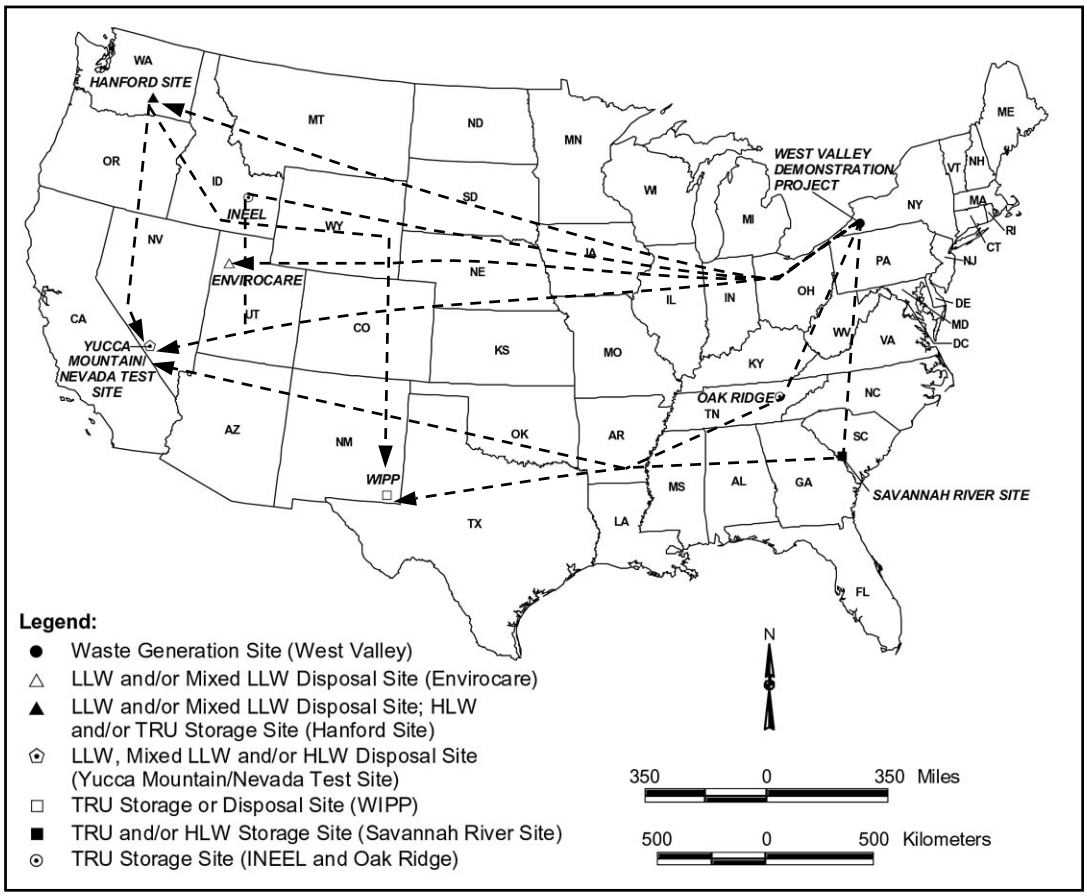

Figure 2-3. Waste Destinations Under Alternative B

2.2 ONSITE WASTE MANAGEMENT FACILITIES

Wastes subject to offsite shipping and disposal under the actions proposed in this EIS are stored in several WVDP buildings. An aerial view of the entire project premises is shown in Figure 2-4, and a schematic of the same view is shown in Figure 2-5. An overview of the site facilities is shown in Figure 1-2.

Vitrified HLW is stored in the Process Building (Figure 2-5). The vitrified HLW was the result of processing liquid wastes that were stored in tanks in the Tank Farm (Figure 2-6). LLW and TRU wastes are stored in the LSB; LSAs 1, 3, and 4; the Chemical Process Cell Waste Storage Area (Figure 2-7); and the Radwaste Treatment System Drum Cell (Figure 2-8). Volume reduction of oversized contaminated materials will occur in the Remote Handled Waste Facility (RHWF) that is currently under construction (Figure 2-7).

Figure 2-4. Aerial View of WVDP Site Facing Southeast

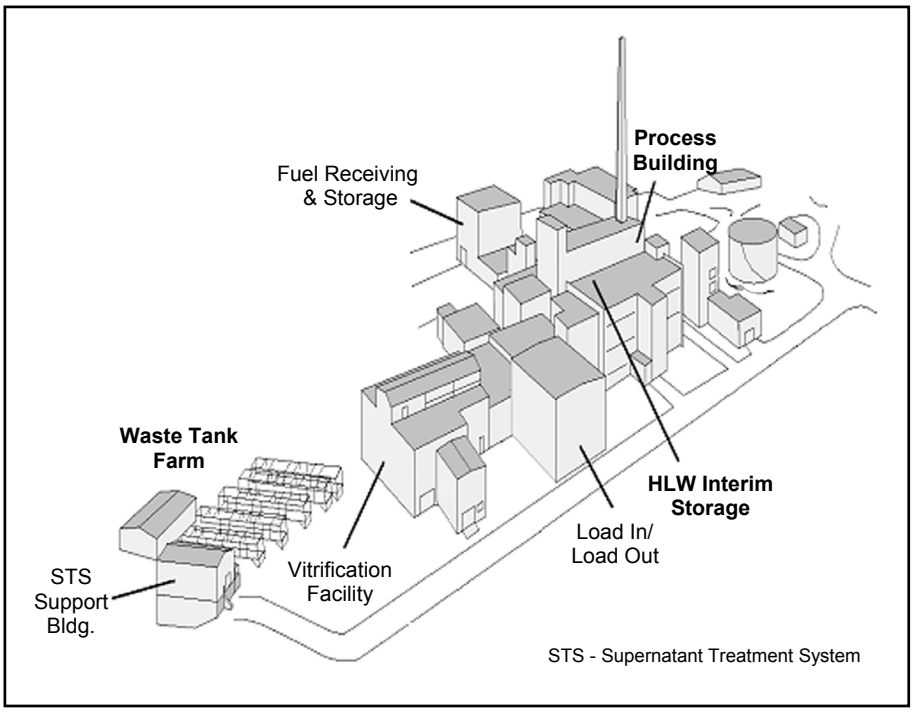

Figure 2-5. Schematic of WVDP Site Facing Southeast

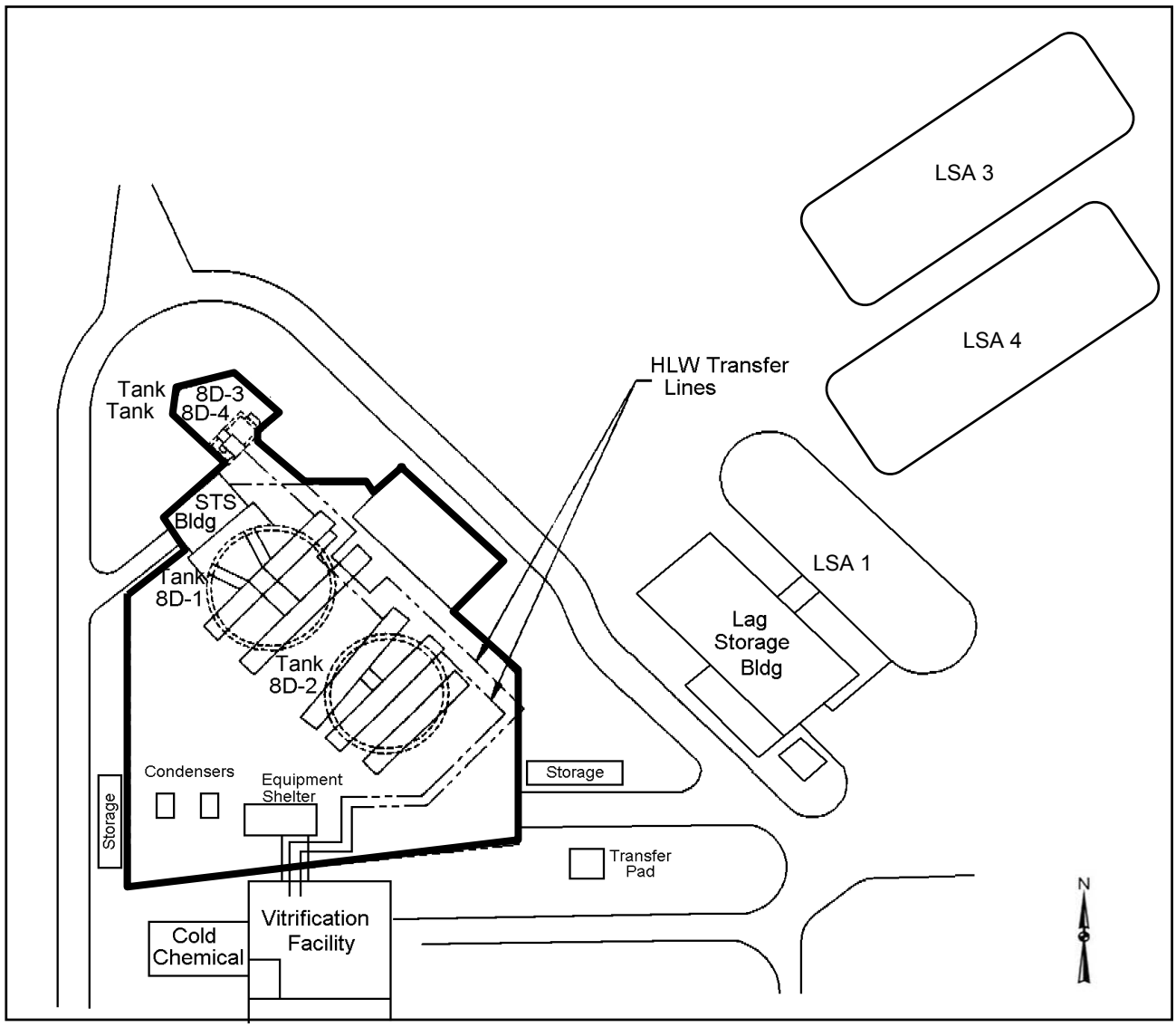

Figure 2-6. Tank Farm Area

2.2.1 Process Building

The Process Building is a multi-storied building that was used from 1966 to 1971 to recover uranium and plutonium from spent nuclear fuel (Figure 2-5). The Fuel Receiving and Storage Area is a metal building attached to the east side of the Process Building. Spent fuel shipments were received, transferred to, and stored in the fuel storage pool inside the Fuel Receiving and Storage Area prior to their transfer to the Process Building. Removal of spent fuel from the Fuel Receiving and Storage Area was completed in July 2001. The Process Building is made up of a series of cells, aisles, and rooms constructed of reinforced concrete and concrete block. The cells were used for mechanical and chemical processing of spent fuel and management of radioactive liquid waste. Operations in the cells were performed remotely by operators from various aisles formed by adjacent cell walls (Marschke 2001).

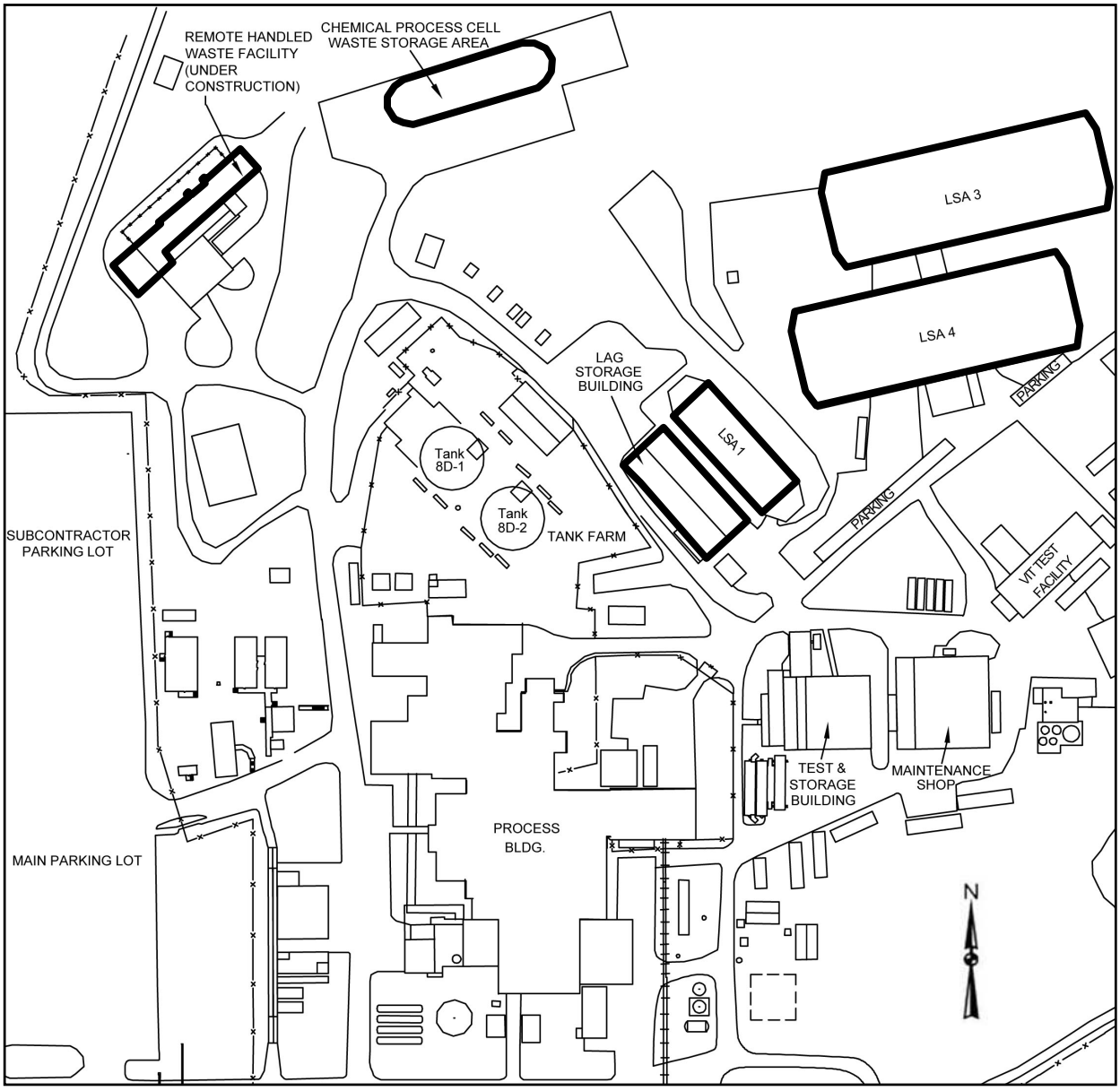

Figure 2-7. Lag Storage Building, Lag Storage Additions, Chemical Process Cell Waste Storage Area, and Remote Handled Waste Facility

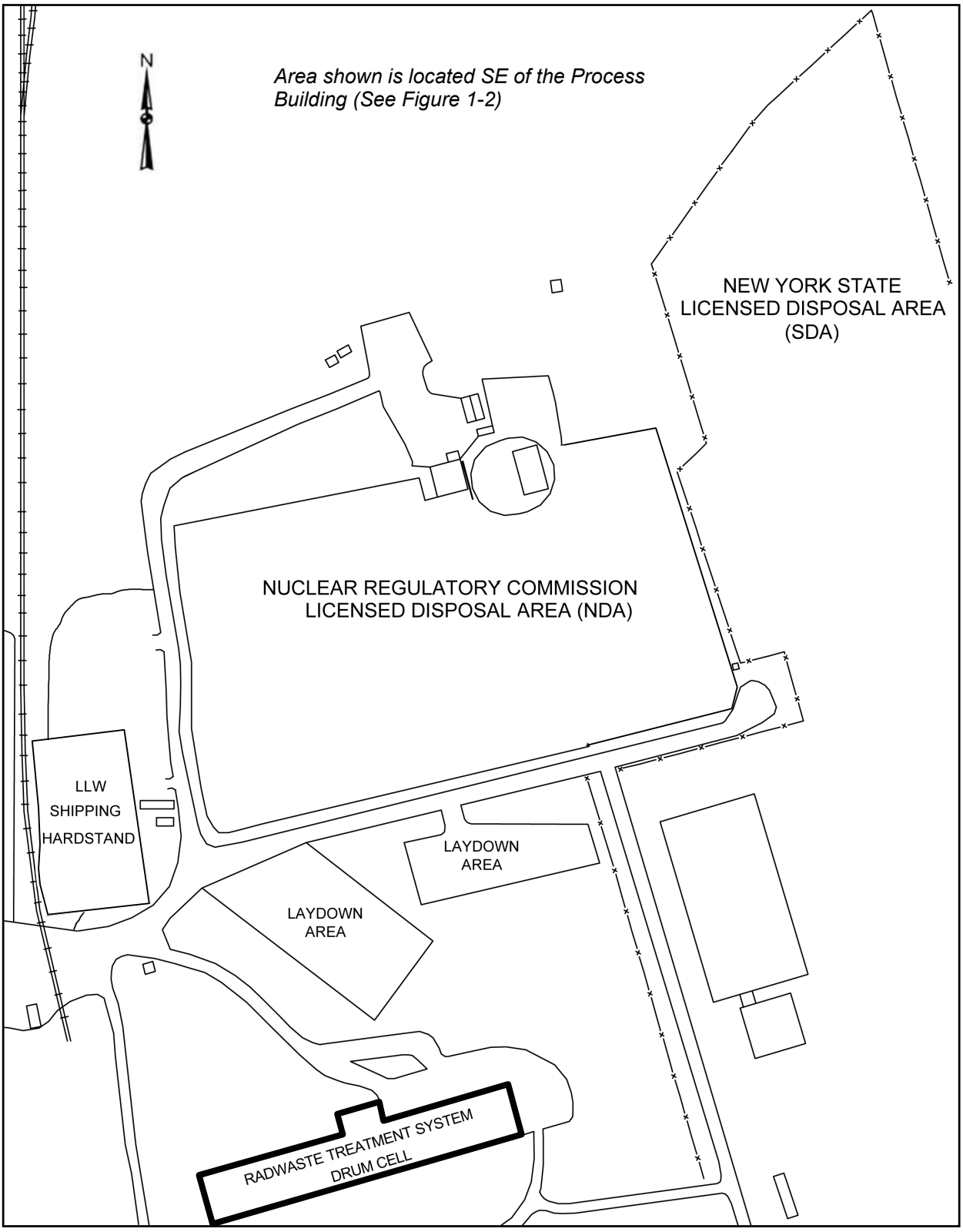

Figure 2-8. Radwaste Treatment System Drum Cell

From 1982 to 1987, the WVDP decontaminated cells and rooms to prepare them for reuse as interim storage space for HLW or as part of the Liquid Waste Treatment System. This involved such activities as removing vessels and piping from cells, removing contamination from walls, and fixing contamination in place. Among the areas decontaminated were the Chemical Process Cell, Extraction Cell 3, Extraction Chemical Room, and Product Purification Cell (Marschke 2001). The Chemical Process Cell is currently used for storage of 275 canisters of HLW in a borosilicate glass matrix produced in the Vitrification Plant.

2.2.2 Tank Farm

The Tank Farm (outlined in Figure 2-6) includes four waste storage tanks (8D-1, 8D-2, 8D-3, and 8D-4), a HLW Transfer Trench, and four support buildings. Built between 1963 and 1965, the waste storage tanks were originally designed to store liquid HLW generated during fuel reprocessing operations. The two larger tanks, 8D-1 and 8D-2, are reinforced carbon steel tanks. Each of these tanks has a storage capacity of about 2.8 million liters (750,000 gallons) and is housed within its own cylindrical concrete vault. Tank 8D-2 was used during reprocessing as the primary storage tank for HLW, with 8D-1 as its designated spare. Both were modified after the WVDP began to support HLW treatment and vitrification operations. The two smaller tanks, 8D-3 and 8D-4, are stainless steel tanks with a storage capacity of about 57,000 liters (15,000 gallons) each. A single concrete vault houses both of these tanks. Tank 8D-3, once designated as the spare for 8D-4, is currently used to store decontaminated process solutions before they are transferred to the Liquid Waste Treatment System for processing. Tank 8D-4, which was used to store liquid acidic waste generated during a single reprocessing campaign, is now used to collect liquids and slurries from the Vitrification Facility waste header. The HLW Transfer Trench is the 150-meter (500-foot)-long concrete vault containing double-walled stainless steel piping that conveys HLW between the Tank Farm and the Vitrification Facility. Upper sections of the pumps used to transfer the HLW through this trench are housed in stainless-steel-lined concrete pits above each tank vault (Marschke 2001).

Support buildings in the Tank Farm include the Supernatant Treatment System (STS) Support Building, Permanent Ventilation System Building, Con-Ed Building, and Equipment Shelter. The STS Support Building is a radiologically clean, two-story structure adjacent to Tank 8D-1. It houses equipment and auxiliary support systems used to operate the STS. A shielded valve aisle on the lower level of the STS contains remotely operated valves and instrumentation used to control system operations. The Permanent Ventilation System Building is a steel-framed and -sided structure near the north end of Tank 8D-2. It provided ventilation to the STS Support Building, pipeway; and more recently to the four waste storage tanks. Currently, however, it is offline and there is no plan to restart it. The Con-Ed Building is a concrete block building on top of the 8D-3/8D-4 vault. It houses instrumentation and valves used to monitor and control operation of these tanks. The Equipment Shelter is a one-story concrete block building immediately north of the Vitrification Facility. It houses the Tank Farm ventilation system that was used in the past to ventilate all four waste storage tanks (Marschke 2001).

2.2.3 Waste Storage Areas

The following sections describe the LSB, LSAs, and Chemical Process Cell Waste Storage Area. These are the areas in which LLW, mixed LLW, and TRU wastes are currently stored.

2.2.3.1 Lag Storage Building

The LSB is an interim status, mixed waste storage facility under RCRA. It is used to store containerized, contact-handled (CH) wastes (wastes with surface dose rates less than 100 millirem [mrem] per hour), including mixed waste, LLW, and suspect CH-TRU wastes (wastes suspected of containing transuranic radioisotopes) generated from WVDP operations (Marschke 2001).

The LSB is a pre-engineered, insulated, metal, Butler-style building located about 122 meters (400 feet) northeast of the Process Building (see Figure 2-7). Constructed in 1984, the LSB is supported by a clear span frame anchored to a 43-meter by 8-meter (140-foot by 60-foot) concrete slab. The listed waste storage operating capacity of the LSB under the RCRA permit (including a center aisle and operating space) is 1,331 cubic meters (47,011 cubic feet), and there are currently 202 cubic meters (7,134 cubic feet) of available storage space (Marschke 2001).

Measuring Radiation

The unit of radiation dose for an individual is the rem. A millirem (mrem) is 1/1,000 of a rem. The unit of dose for a population is person-rem and is determined by summing the individual doses of an exposed population. Dividing the person-rem estimate by the number of people in the population indicates the average dose that a single individual could receive. The potential impacts from a small dose to a large number of people can be approximated by the use of population (that is, collective) dose estimates.

2.2.3.2 Lag Storage Addition 1

LSA 1, used to store LLW, is a flexible fabric structure about 122 meters (400 feet) northeast of the Process Building, next to and just east of the LSB (see Figure 2-7). It was constructed in 1987 to protect radioactive waste containers from wind and precipitation. LSA 1 has a pre-engineered steel frame over which vinyl fabric has been pulled and attached to create a weather-protective enclosure (Marschke 2001).

LSA 1 has a footprint that measures 15 meters by 58 meters (50 feet by 191 feet), and it is 7 meters (23 feet) high at the top center. The usable inside area is about 11 meters wide by 44 meters long by 4 meters high (37 feet by 144 feet by 14 feet). In 1999, a 4-meter (14-foot)-wide concrete corridor was added to the full length of the west side of the addition. The floor on the east side remains compacted gravel. The listed waste storage operating capacity is 1,287 cubic meters (45,454 cubic feet), and there are currently 235 cubic meters (8,282 cubic feet) of available storage space (Marschke 2001).

2.2.3.3 Lag Storage Additions 3 and 4

LSA 3 and LSA 4 are interim status, LLW and mixed LLW storage facilities under RCRA. They are twin, adjacent structures located about 152 meters (500 feet) northeast of the Process Building, just east of LSA 1 (see Figure 2-7). Originally built in 1991 and upgraded in 1996 (LSA 3) and 1999 (LSA 4), these structures provide enclosed storage space for waste containers. LSA 4 also contains the Container Sorting and Packaging Facility, which was added in fiscal year (FY) 1995. A shipping depot has been added to the south side of the structure (Marschke 2001).

LSA 3 and LSA 4 have sheet metal sides and roof over an internal structural steel frame anchored to a concrete floor. Each building's footprint is 27 meters by 89 meters (88 feet by 292 feet). Each building's outside walls rise vertically 8 meters (26 feet). Each concrete floor has a 15-centimeter (6-inch) curb around its perimeter. LSA 3 has an operating capacity of 4,701 cubic meters (166,018 cubic feet), while LSA 4 has an operating capacity of 4,162 cubic meters (146,980 cubic feet). There are currently 789 cubic meters (27,880 cubic feet) of available storage space in LSA 3, and 1,084 cubic meters (38,278 cubic feet) of available space in LSA 4 (Marschke 2001).

Located just inside and to the west of LSA 4's south wall roll-up door is the Container Sorting and Packaging Facility. This engineered area was added in 1995 for contact sorting of previously packaged wastes. The walls and ceiling of this 12-meter by 9-meter (40-foot by 28-foot) area are made of prefabricated, modular, 22-gauge stainless-steel panels. On the south side of LSA 4, there is a 21-meter by 28-meter (69-foot by 91-foot) enclosed shipping depot to enhance WVDP's ability to ship wastes off the site for disposal (Marschke 2001).

2.2.3.4 Chemical Process Cell Waste Storage Area

The Chemical Process Cell Waste Storage Area is an area about 274 meters (900 feet) northwest of the Process Building (see Figure 2-7). Originally built in 1985 as a storage area primarily for radioactively contaminated equipment packaged and removed from the Chemical Process Cell, it now consists of a Quonset-hut-style enclosure and its structural base frame. This enclosure, which is 61 meters (201 feet) long by 20 meters (65 feet) wide by 8 meters (25 feet) high at the center, is built from four major, independent sections. The two center sections are each about 19 meters (62 feet) by 20 meters (65 feet), and the two end sections are each about 12 meters (39 feet) by 20 meters (65 feet). Each section is bolted to the same foundation base and banded to the adjacent section. The structural base frame is an I-beam attached to a top plate of sixty anchors 2 meters (7 feet) long and 25 centimeters (10 inches) in diameter that are screwed into the ground (Marschke 2001).

Twenty-two painted carbon steel waste storage boxes of various sizes are stored within the Chemical Process Cell Waste Storage Area. These boxes, which contain contaminated vessels, equipment, and piping removed from the Chemical Process Cell, are stored in the center area of the enclosure. This center area is surrounded by 45 hexagonal concrete shielding modules. Each cavity contains twenty-one 55-gallon drums arranged as three 7-packs. These modules provide line-of-sight shielding around the 22 waste boxes they encircle. Four carbon steel waste boxes are placed on the east end of the enclosure, outside of the array of shielding modules but inside the metal enclosure for additional shielding. Nine carbon steel waste boxes are stored on the west end of the enclosure for the same purpose. These 13 waste boxes contain low dose LLW equipment and material removed from clean-up activities carried out in the Product Purification Cell and Extraction Cell 3 (Marschke 2001).

2.2.4 Radwaste Treatment System Drum Cell

The Radwaste Treatment System Drum Cell is a metal structure located about 610 meters (2,000 feet) south of the Process Building (see Figures 1-2 and 2-8). Established in 1986, it provides shielded, passive storage for about 19,900 square drums of cement-solidified LLW, each with a capacity of 269 liters (71 gallons), produced during Cement Solidification System operations. The Radwaste Treatment System Drum Cell includes a gravel basepad, a vertical perimeter internal shield wall, an enclosing temporary weather structure, shielded load-in/load-out area, operator office, and miscellaneous mechanical handling and operations support equipment (Marschke 2001).

The basepad is a layered construction of crushed stone on a geotextile mat placed on top of a 1- to 2-meter (3- to 6-foot) layer of compacted native clay. Moisture and settlement detecting instruments are installed in the clay layer. The Temporary Weather Structure is a pre-engineered metal-sided building that is 114 meters long (375 feet) by 18 meters (60 feet) wide by 8 meters (26 feet) high at the outside eave and totally encloses the 0.5-meter (20-inch) thick by 4.6-meter (15 feet) high concrete shield wall and stored drums. A 1,800-kilogram (2-ton) overhead crane that spans the building is used to move concrete drums into and out of their horizontal storage locations with a 900-kilogram (1-ton) drum grabber. A 696-centimeter (274-inch)-wide crane maintenance area occupies the full 18 meters (60 feet) on the west end. The floor of this area is gravel (Marschke 2001).

2.2.5 Remote Handled Waste Facility

Wastes that have high surface radiation exposure rates or contamination levels require processing using remote-handling technologies to ensure worker safety. These are referred to as remote-handled wastes and will be processed in the RHWF.

The RHWF is currently under construction, but when complete it will be a free-standing facility, approximately 58 meters (191 feet) long by 28 meters (93 feet) wide by 14 meters (45 feet) high. It is located in the northwest corner of the WVDP site, northwest of the STS Support Building and southwest of the Chemical Process Waste Storage Area (see Figure 2-7). Primary activities in the RHWF will include confinement of contamination while handling, assaying, segregating, cutting, and packaging remote-handled waste streams. The RHWF will cut relatively large components into pieces small enough to fit into standard types of waste containers.

The RHWF contains a receiving area, buffer cell, work cell, contact maintenance area, sample packaging and screening room, radiation protection operations area, waste packaging and survey area, operating aisle, office area, and the loadout/truck bay. The shield walls, doors, and windows of the RHWF will be constructed so that the radiation exposure rate in normally occupied areas will be no greater than 0.1 milliroentgen per hour.

The wastes to be processed in the RHWF are a variety of sizes, shapes, and materials, including structural steel, concrete, grout, resins, plastics, filters, wood, and water. These materials will be in the form of tanks, pumps, piping, fabricated steel structures, light fixtures, conduits, jumpers, reinforced concrete sections, personal protective equipment, general rubble, and debris. Waste from the RHWF will be packaged into 55-gallon drums and B-25 boxes.

2.3 NO ACTION ALTERNATIVE – CONTINUATION OF ONGOING WASTE MANAGEMENT ACTIVITIES

A no action alternative must be considered in all EISs to provide a benchmark against which the impacts of the proposed action and alternatives can be compared. For this project, the No Action Alternative means continuing with the waste management activities that were previously described in the *Final Environmental Impact Statement, Long-Term Management of Liquid High-level Radioactive Wastes Stored at the Western New York Nuclear Service Center, West Valley* (DOE 1982) and its two supplemental analyses, environmental assessments, and categorical exclusion documentation. These activities would include continued surveillance, maintenance, monitoring, and other operational support of facilities to meet requirements for safety and hazard management. A limited amount of Class A LLW would be shipped to NTS or to a commercial disposal site such as Envirocare (although shipments to Hanford are also included for the purposes of analysis). TRU waste would continue to be stored on the site. HLW would continue to be stored in the Process Building on the site. Management of the waste storage tanks would also continue as under current operations which provide for active ventilation of the tanks and the annulus surrounding the tanks that is filtered through multiple banks of high-efficiency particulate air (HEPA) filters before being discharged.

Under the No Action Alternative, waste management activities would include:

- Using the full capacity of the lag storage facilities (LSB and LSAs 1, 3, and 4). Currently, these facilities are at about 80 percent of their capacity.

- Processing waste from the Chemical Process Cell Waste Storage Area through the RHWF (see Figure 2-7) that is currently under construction, with the processed LLW being stored in one of the